# THE BELL SYSTEM
# TECHNICAL JOURNAL

A JOURNAL DEVOTED TO THE SCIENTIFIC AND ENGINEERING ASPECTS OF ELECTRICAL COMMUNICATION

*EDITORS*

R. W. KING J. O. PERRINE

*EDITORIAL BOARD*

W. H. HARRISON
O. B. BLACKWELL
H. S. OSBORNE
J. J. PILLIOD
O. E. BUCKLEY
M. J. KELLY
A. B. CLARK
S. BRACKEN

## TABLE OF CONTENTS
AND
## INDEX

VOLUME XXIV

1945

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
NEW YORK

PRINTED IN U. S. A.

# THE BELL SYSTEM
# TECHNICAL JOURNAL

## VOLUME XXIV, 1945

## Table of Contents


**JANUARY, 1945**

Intermittent Behavior in Oscillators—*W. A. Edson* ..... 1

Evaluating the Relative Bending Strength of Crossarms—*Richard C. Eggleston* ..... 23

Mathematical Analysis of Random Noise (Concluded)—*S. O. Rice* ..... 46

**APRIL, 1945**

Piezoelectric Crystals in Oscillator Circuits—*I. E. Fair* ..... 161

The Measurement of the Performance Index of Quartz Plates—*C. W. Harrison* ..... 217

Lightning Protection of Buried Toll Cable—*E. D. Sunde* ..... 253

**JULY-OCTOBER, 1945**

Physical Limitations in Electron Ballistics—*J. R. Pierce* ..... 305

Electron Ballistics in High-Frequency Fields—*A. L. Samuel* ..... 322

Dynamics of Package Cushioning—*Raymond D. Mindlin* ..... 353

# Index to Volume XXIV


**C**

Cable, Buried Toll, Lightning Protection of, *E. D. Sunde*, page 253.
Crossarms, Evaluating the Relative Bending Strength of, *Richard C. Eggleston*, page 23.
Crystals, Piezoelectric, in Oscillator Circuits, *I. E. Fair*, page 161.
Crystals: The Measurement of the Performance Index of Quartz Plates, *C. W. Harrison*, page 217.
Cushioning, Package, Dynamics of, *Raymond D. Mindlin*, page 353.

**E**

*Edson, W. A.*, Intermittent Behavior in Oscillators, page 1.
*Eggleston, Richard C.*, Evaluating the Relative Bending Strength of Crossarms, page 23.
Electron Ballistics, Physical Limitations in, *J. R. Pierce*, page 305.
Electron Ballistics in High-Frequency Fields, *A. L. Samuel*, page 322.

**F**

*Fair, I. E.*, Piezoelectric Crystals in Oscillator Circuits, page 161.

**H**

*Harrison, C. W.*, The Measurement of the Performance Index of Quartz Plates, page 217.
High Frequency Fields, Electron Ballistics in, *A. L. Samuel*, page 322.

**L**

Lightning Protection of Buried Toll Cable, *E. D. Sunde*, page 253.

**M**

*Mindlin, Raymond D.*, Dynamics of Package Cushioning, page 353.

**N**

Noise, Random, Mathematical Analysis of (Concluded), *S. O. Rice*, page 46.

**O**

Oscillator Circuits, Piezoelectric Crystals in, *I. E. Fair*, page 161.
Oscillators, Intermittent Behavior in, *W. A. Edson*, page 1.

**P**

Package Cushioning, Dynamics of, *Raymond D. Mindlin*, page 353.
*Pierce, J. R.*, Physical Limitations in Electron Ballistics, page 305.

**Q**

Quartz Plates, The Measurement of the Performance Index of, *C. W. Harrison*, page 217.

**R**

*Rice, S. O.*, Mathematical Analysis of Random Noise (Concluded), page 46.

**S**

*Samuel, A. L.*, Electron Ballistics in High Frequency Fields, page 322.
*Sunde, E. D.*, Lightning Protection of Buried Toll Cable, page 253.